

Doctors of Laws, including several ladies. This is the first instance of the bestowal by the University of honorary degrees upon ladies.

The new botanical department of the University was opened by Sir Joseph Hooker on Thursday in the presence of a distinguished company. Sir Joseph Hooker prefaced the ceremony with a description of the work done by his father both before and after he became professor of botany in the University in the first quarter of last century. He had not been educated for the medical, or, indeed, any other learned profession. Having inherited ample means and having been from childhood devoted to the study and collection of objects of natural history, he determined to devote his life and his fortune to travel and scientific pursuits. Early in 1820, reduced circumstances requiring him to turn his botanical attainments to material account, he obtained, through the influence of his friend Sir Joseph Banks with George III., the chair of Regius Professor of Botany in this University. It was a bold venture for him to undertake so responsible an office, for he had never lectured, or even attended a course of lectures, and in Glasgow, as in all other Universities in the kingdom, the botanical chair was, and had always been, held by a graduate in medicine. Owing to these disqualifications his appointment was naturally unfavourably viewed by the medical faculty of the University. But he had resources that enabled him to overcome all obstacles—familiarity with his subject, devotion to its study, energy, eloquence, a commanding presence, with urbanity of manners, and, above all, the art of making the student love the science he taught. Continuing, Sir Joseph Hooker said:—

If I were asked what I regarded as of most importance to the student in the manner of my father's teaching I would answer that it taught the art of exact observation and reasoning therefrom, a schooling of inestimable value for the medical man, and one that is given in no other profession, but which ought to come, in this country, as it does in Germany, early in the education of every child. I have met many of my father's pupils abroad, in India and the Colonies, who have told me that these botanical lectures gave them the first ideas they had ever entertained of there being a natural classification of the members of the vegetable kingdom. Then with regard to the results in a botanical point of view, the magnetism of the lecturer and the interest of the subject imbued many of his pupils with a love of science that proved permanent and fruitful. They made observations and collections for their quondam professor in the temperate and tropical climates of both hemispheres, some of them throughout their lives, which have very largely contributed to a knowledge of the flora and vegetable resources of the globe. After twenty years of professorship my father retired, and undertook the directorship of the Royal Gardens, Kew. Since that period great changes have been introduced in the method of botanical teaching in all our Universities, due, on the one hand, to a vastly advanced comprehension of the structure of plants and of the functions of their organs, and, on the other, to a recognition of the fact that the study of the animal and vegetable kingdoms cannot be considered apart. Furthermore, chemistry, physics and greatly improved microscopes are now necessary for the elucidation of the elementary problems of plant life. The instruction in these two sciences (chemistry and physics) has with all others advanced in this University *pari passu* with that of botany, and kept it in the forefront of the educational establishments of the kingdom. The addition of the building in which we are assembled is evidence of the resolve that it shall not relax its efforts to maintain its well-earned position, and with the conviction that the botanical laboratory will prove an invaluable aid to research under the ægis of its distinguished director, I now, under his authority, declare it open.

The official celebration of the jubilee was brought to a close on Friday, when an oration on William Hunter, by Prof. Young, was read by Prof. Bower in the Bute Hall.

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NOTES.

THE late Prof. G. F. Fitzgerald was so highly esteemed in the world of science that a movement to establish a memorial of his greatness will certainly meet with ready and liberal support. It is proposed to found a "Fitzgerald Research Scholarship," to be awarded annually at Trinity College, Dublin; and a large and influential committee of leaders of science at home and abroad has been formed to obtain funds for this purpose. The object is one which would have had the entire approval of Prof. Fitzgerald, whose chief care was the encouragement of experimental research in the laboratories entrusted to his guidance at Trinity College. The scholarship would be attached to the department of experimental physics in the College, and would enable promising students to pursue investigations which, for want of means of immediate support, might otherwise have to be relinquished. Prof. Fitzgerald's marvellous faculties and noble character are so well known and appreciated among scientific men that it is almost unnecessary to urge the claims of the object to their attention. We have confidence that the response to the appeal for funds will be sufficient to provide an adequate endowment for the scholarship it is desired to establish. Subscriptions should be sent to one of the honorary treasurers, Prof. D. J. Cunningham, F.R.S., or Dr. H. H. Dixon, Trinity College, Dublin.

A COMMITTEE has recently been appointed by the Institution of Civil Engineers, with the support of the Institutions of Mechanical Engineers and Naval Architects and of the Iron and Steel Institute, to consider the advisability of standardising the various kinds of iron and steel sections, and, if found advisable, then to consider and report as to the steps which should be taken to carry such standardisation into practice. The committee is composed as follows:—Mr. James Mansergh, Sir Benjamin Baker, K.C.M.G., Sir John Wolfe Barry, K.C.B., Sir Frederick Bramwell, Bart., Sir Douglas Fox, Mr. G. Ainsworth, Mr. William Dean, Mr. A. Denny, Mr. J. Allen McDonald, Mr. E. Windsor Richards, Mr. James Riley, Prof. W. C. Unwin, F.R.S., and Dr. J. H. T. Tudsbery (hon. secretary). Mr. Leslie S. Robertson, of 28, Victoria Street, S.W., has been appointed secretary to this committee, which has already commenced its work by taking evidence tendered by engineers, manufacturers and contractors bearing upon the subject of the inquiry.

THE Société des Amis des Sciences physiques et mathématiques at Poltava, Russia, is making arrangements to celebrate the centenary of the birth of Michel Ostrogradsky at Poltava on September 12-25 next.

THE following gentlemen have been elected to fill up vacancies in the list of foreign members of the London Mathematical Society:—Prof. Ulisse Dini, Pisa; Prof. Georg Cantor, Halle-a-Saale; and Prof. David Hilbert, Göttingen.

THE Berlin correspondent of the *Times* announces that an office has been opened in Berlin in order to co-operate in the preparation of an international catalogue of scientific literature. Dr. Oscar Uhlworm, chief Royal librarian, has been appointed to direct the work of the office.

THE Royal Horticultural Society will hold an exhibition of lilies at their Chiswick Garden, on Tuesday and Wednesday, July 16 and 17. On July 16 a conference on lilies will also take place in the Garden. The chair will be taken by Mr. H. J. Elwes, F.R.S., who will deliver an opening address on lilies discovered or brought into cultivation since the issue of his monograph on the subject.

THE fifth malarial expedition of the Liverpool School of Tropical Medicine, consisting of Major Ronald Ross, F.R.S., and Dr. Logan Taylor, left Liverpool for Freetown, Sierra Leone, on Saturday morning in the steamship *Axim*. It is proposed to attempt the extermination of the *Anopheles* mosquito on the West African Coast. The expedition has been equipped, free of expense, with large quantities of cement, petroleum, creosote and other means of attacking the *Anopheles*' breeding-grounds. The most dangerous time of the year, when the rainy season is at its worst, has been chosen as the most likely to test the efficacy of the intended operations.

At a meeting of the subscribers to the Symons Memorial Fund, held on Tuesday, June 11, the executive committee reported that the proposal that the memorial to Mr. G. J. Symons, F.R.S., should take the form of a gold medal had been approved, and that the sum of 713*l.* 14*s.* 7*d.* had been subscribed for that purpose. After paying for the dies for the medal and the expenses of printing and postage, there remained a balance of 621*l.* 14*s.* 4*d.*, which the treasurer was instructed to hand over to the Royal Meteorological Society for the interest on the same to be used for the awards of the medal. It was resolved that the medal should be awarded biennially for distinguished work done in connection with meteorological science, irrespective of sex or nationality.

At the summer meeting of the Institution of Naval Architects, to be held at Glasgow on June 25-27, Lord Glasgow, president of the Institution, will occupy the chair. Among the papers to be read are:—"On the Limit of Economical Speed of Ships," by Mr. E. T. D'Eyncourt; "On Screw Propellers" (abstracts of two papers by M. Drzewiecki); and "The Adoption of a Rational System of Units in Questions of Naval Construction," by M. Hauser, chief engineer in the French Navy (retired). The dinner of the Institution will be held on June 26 in the grounds of the Glasgow Exhibition, and will only be open to members and the official guests. The festivities include a *conversazione* at the invitation of the Lord Provost and the Corporation, a garden party at Kelburne, Lord Glasgow's seat, a reception at the University at the invitation of Principal Story and the Senate, and a cruise on the Firth of Clyde.

We are indebted to *Science* for the following items of news:—Prof. Ira Remsen, professor of chemistry in the Johns Hopkins University since its foundation in 1876, has been elected president of the University.—A committee consisting of Prof. Ira Remsen, J. S. Ames and W. H. Welch has been appointed to arrange a memorial to the late Prof. Henry A. Rowland.—It is announced that Mr. John D. Rockefeller has given 200,000 dollars for the foundation of an institute for medical research, and it is understood that this fund will be increased as needed. At present America lacks an institution corresponding to the Pasteur Institute in Paris or the Jenner Institute in London. It appears that this need will be met by Mr. Rockefeller's gift, though the exact scope of the institution is still under consideration.

THE Council of the Society of Arts attended on Friday last at Marlborough House to present the King with the Albert medal of the society, which, as already announced, had been awarded to His Majesty "in recognition of the aid rendered by His Majesty to arts, manufactures and commerce during thirty-eight years' presidency of the Society of Arts, by undertaking the direction of important exhibitions in this country and the executive control of British representation at international exhibitions abroad, and also by many other services to the cause of British industry." The King said that he accepted the interesting medal, founded in memory of his lamented father, with much pleasure, because, during his long association with the Society

of Arts as its president he had always taken a warm interest in its proceedings and its success. A special reason which enhanced the gratification with which he accepted the medal was that not many years ago he had himself, as president of the Society, presented it to his beloved mother, her late Majesty Queen Victoria. His Majesty added that, although he had retired from the active duties of the presidentship, he would continue to take a warm interest in the Society as its patron.

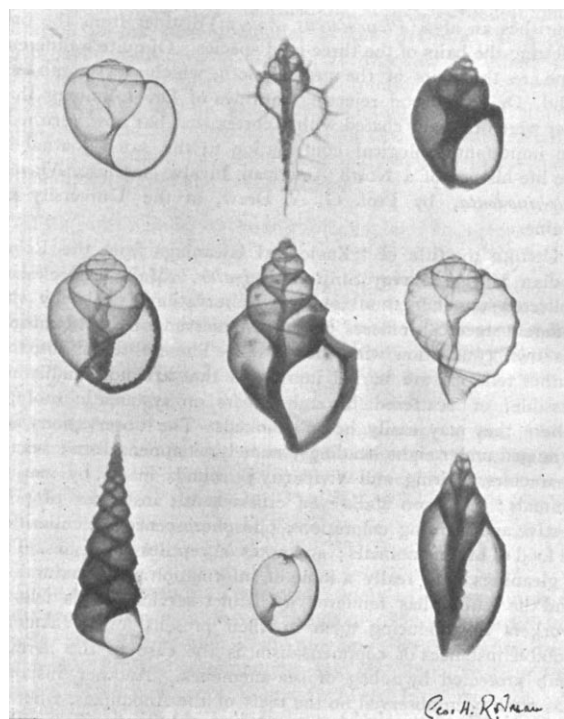
PROF. RAY LANKESTER has now received the case shipped at Mombasa on April 19, containing the skin and two skulls of the remarkable new giraffe-like animal obtained from the Semliki forest by Sir Harry Johnston, and sent by him for preservation in the Natural History Department of the British Museum. Writing to the *Times* with reference to the specimens, Prof. Lankester says: "The animal is a giraffe-like creature devoid of horns, with relatively short neck and with colour stripes on the limbs, but nowhere showing spots or areolæ like those of the giraffe. Sir Harry Johnston was amply justified in assimilating the animal to the extinct *Helladotherium*, but after an examination of the skulls I am of opinion that the 'Okapi' (the native name by which the new animal is known) cannot be referred to the genus of the *Helladotherium*, but must be placed in a new genus. I must say that, although the horny hoofs are not present, yet the double bony supports of the hoofs are preserved with the skin, and leave no doubt, even without reference to the accompanying skulls, that the animal which bore the skin was not a horse-like creature, but one with cloven hoofs."

It is proposed to hold an exhibition on an extensive scale at Bendigo at the end of this year, under the auspices of the Government of Victoria, to commemorate the discovery of gold in 1851, and to celebrate the jubilee in a manner that will rank as a fitting memorial of the first anniversary of the Australian Commonwealth. Prominence will be given to the gold-mining and other mineral resources, and phases of mining in Victoria and other States, and special courts will be erected for the display of manufactures and industries, wool, agriculture, dairying machinery, &c. The Bendigo School of Mines will provide a model laboratory for the Exhibition, equipped with furnaces and apparatus for metallurgical and chemical work. There will be five main divisions of the exhibits and twenty-five sections, in which the applications of science to mining and to the development of other natural resources will be well represented.

DURING the past week the use of wireless telegraphy upon ocean liners has been satisfactorily demonstrated. A series of messages were despatched and received by passengers on the Cunard liner *Lucania*, which sailed from Liverpool on Saturday, and also by passengers on the Elder Dempster liner *Lake Champlain*, which reached the Mersey from Montreal on Monday afternoon. Stations have been established by the Marconi Company in connection with the Post Office wires, so that telegraphic messages can be received or despatched by passengers *en voyage*, the communication between the station and the vessel being by wireless telegraphy. The number of these stations is, as yet, not large, but there are enough of them to enable communication to be maintained, though with considerable intervals, from the time the vessel leaves Liverpool till she is an hour or so past the Fastnet. While in the Mersey she can speak with the training-ship *Conway*. As she steams along the north coast of Wales she gradually becomes within range of the station at Holyhead, which is about sixty-four miles from Liverpool. The next station is at Rosslare, in the south-east corner of Ireland, about ninety miles from Holyhead, and the last station is Crookhaven. Homeward bound vessels can pick up the stations in the reverse order. On Monday communica-

tion was established with Crookhaven by the *Lake Champlain*, and numerous service and private telegrams were despatched notifying the steamer's safe arrival off Ireland. The next station communicated with was Rosslare when forty-five miles distant. For more than five hours there was a continuous stream of messages, upwards of fifty being sent. Communication was next established with Holyhead, greetings being interchanged at a distance of $33\frac{1}{2}$ miles. When $37\frac{1}{4}$ miles from Liverpool a message was received from the owners and orders were despatched instructing the captain to disembark passengers at the Princes' landing stage.

A SERIES of fine radiographs obtained by Dr. G. H. Rodman, of East Sheen, has been sent to us by Messrs. Cox and Co.; and as we admire the minute details shown by them, we appreciate the remarkable advances made in Röntgen ray photography since the first pictures were obtained six years ago.



1 Ampullaria.	2 Murex.	3 Eburna.
4 Cassis.	5 Struthiolaria.	6 Dolium (young).
7 Turritella.	8 Bulla.	9 Voluta.

Four years ago a series of radiographs of all the British batrachians and reptiles was prepared by Messrs. Green and Gardiner and published. The application of Röntgen rays to biological study was well exemplified by these pictures, and also by radiographs of molluscs obtained later by the same observers, one of an entire *Nautilus* and another of an entire *Chiton* being particularly memorable. The uses of radiography to the study of the shells of the Mollusca are, however, not so well known as they deserve to be, and we are glad to direct attention to the accompanying pictures obtained by Dr. Rodman. The correct systematic position of many forms depends on the presence or absence of certain plaits, or folds, or tooth-like projections, either on the central shelly pillar (columella) or on the inner sides of the outer wall of the shell. These are frequently so situated as to be invisible through the aperture, and when only a single specimen may be available, which it is undesirable to sacrifice in the cause of science, the utility of radio-

graphy in this connection at once becomes apparent. The evidence of the accidental inclusion of a smaller shell (it is too large for an embryo) in No. 7 is noteworthy. Radiography may also be able to determine the mineral condition of the shell, whether the carbonate of lime in its substance takes the form of calcite or arragonite, or of the one in the young and the other in the older shell, as would almost seem to be the case in No. 7. On this point, however, further research is necessary. In the case of the recent *Nautilus* shell, the Röntgen process shows the details of every septum and the siphuncle with great clearness, as may be seen by reference to plate xv. of vol. xi. of the *Proceedings* of the Malacological Society of London. For the benefit of those who may wish to emulate Dr. Rodman, we may add that the exposure employed by him was 80 seconds at a distance of 11 inches on an Imperial Special Rapid plate, using a Cox 10-inch spark coil and their "Record" focus tube. This is the tube which has just been awarded the gold medal given by the president of the Röntgen Society, Dr. John Macintyre.

WE have received from the president of the International Aeronautical Committee a preliminary account of the balloon ascents on May 14. Eighteen ascents took place, including manned and unmanned balloons, of which six were at Berlin, four at Strassburg and three at Vienna. Two of the unmanned balloons have not yet been found. The highest altitudes were reached by the French balloons. One of these ascents, made from Chalais-Meudon, was particularly interesting: at starting the temperature was $15^{\circ}8$ C., zero was recorded at 3661 m., -50° at 9640 m., and the lowest temperature, $-55^{\circ}8$, at 11,025 m.; but an inversion of temperature afterwards occurred, and on reaching the greatest altitude, 15,414 m., the thermometer had risen to $-32^{\circ}2$. Two balloons were sent up from Trappes (near Paris): one at 2h. 30m. a.m., which recorded 0° at 2740 m. and -64° at 11,400 m.; the other, at 8h. a.m., recorded zero at 2900 m. and -60° at 11,200 m. On this occasion no balloon was sent up by this country.

THE new standard pentane ten-candle-power lamp and the new form of photometer, prescribed for use in the official gas testing-stations in London, were described by Prof. Frank Clowes at a meeting of the Incorporated Gas Institute on Wednesday, June 12. The source of light in the new lamp is the flame produced by burning, under suitable and definitely prescribed conditions, a stream of carburetted air. The carburetting liquid is the light petroleum known under the chemical name of pentane. The liquid pentane evaporates rapidly at ordinary atmospheric temperatures, and the vapour which it produces is rather more than two and a half times as heavy as atmospheric air. As the name of the lamp implies, its flame has been shown to give under prescribed conditions a constant illumination equal to that furnished by ten standard candles. The new photometer differs in its arrangement from the bar-photometers which were previously in use in the fact that the flames under comparison are upon one side of the translucent screen, whereas in the old forms the burners were placed on opposite sides of the illuminated screen. But another essential difference from the older forms of photometer, which provided for one fixed and one travelling source of light, is that in the new photometer both sources of light are fixed in position at accurately measured distances from the observing screen. The equating of the illumination of the screen is brought about by adjusting the supply of the gas which is being tested to the Sugg's London argand-burner. The new photometer and standard lamp have now been in use for some time in the fixed testing-stations and in different buildings in the area of the county of London. The gas-examiners who have constantly employed the new apparatus express a decided preference for it as compared with the bar-

photometer; and they have readily adapted themselves to the somewhat special manipulation and observation which it requires.

THE phenomenon of "accidental double refraction," which occurs in liquids when these are subject to changes of shape, or, to describe more correctly, rates of strain, forms the subject of an article by Prof. Ladislaus Natanson in the *Bulletin* of the Cracow Academy. The author gives an investigation, mainly hydrodynamical, of the case where the rates of strain are produced in a viscous liquid contained in the space between a rotating cylinder and a concentric cylindrical envelope. A formula is found connecting the angular velocity of the cylinder with the double refraction per unit length, and this formula appears to agree well with some of the experimental results of Umlauf and De Metz.

AN illustrated article on the Kress flying machine appears in *Die Umschau* for June 8. As has been stated in previous accounts in several journals, the apparatus is a multiple winged machine attached to a light boat, and the proposed method of experimenting is to drive the boat through the water until a sufficient speed has been attained for the thrust on the wings to cause it to rise from the surface. The writer of the article, however, evidently considers that the construction of the "air ship" has been somewhat prematurely pushed forward, seeing that the most important part of the apparatus, namely, the motor, is not yet ready. He also is of opinion that the problem of landing has not been sufficiently studied. Several experiments have already been made with the apparatus, without, however, leaving the water; but it will be when the machine has been made capable of lifting itself into mid-air that the chief difficulties of the investigation will arise.

THE fourth annual dinner of old students of the Central Technical College will be held on Wednesday, July 3, with Prof. O. Henrici, F.R.S., in the chair. Tickets can be obtained from the honorary secretary, Mr. Maurice Solomon, 12 Edith Road, West Kensington.

CAPTAIN STANLEY FLOWER sends us his Report, as director, of the Ghizeh Zoological Gardens for the year 1900. The list of donations is a satisfactory one, and we are glad to note that very much has been effected during the year in the way of adding new buildings and improving old ones, as well as in making additional aviaries and enclosures in the gardens.

IN the first part of a new biological journal—the *Bulletin* of the Brooklyn Institute—Mr. A. G. Mayer discusses the variations displayed by a species of Medusa from the Florida seas. The species in question is considered to have been derived very recently from a form common in Florida waters, but to be so distinct as to constitute a genus by itself. "It is remarkably variable, and its great commonness attests to its successfulness in the struggle for existence. In its variations it illustrates the manner in which other newly arisen races of animals may have suddenly given rise to still more diverse species."

PARTS ii. and iii. of the third volume of *Annotiones Zoologicae Japonenses* are devoted to a list of the fishes of Japan, by Messrs. Jordan and Snyder. A total of 686 species are recognised. Apart from its importance to the students of ichthyology, this communication is worthy of the best attention of those interested in the distribution of marine animals, as the authors have been enabled to divide the Japanese marine fish-fauna into four distinct groups. There are the northern or Yezo group, the temperate or Nippon group, the semitropical or Kiusiu group, and the Bassalian or deep sea group. The fish fauna of the Kurile Islands, which is probably very similar to that of Kamchatka, belongs to a distinct subarctic group, while that of Formosa probably pertains to the tropical Malayan assemblage.

THE structure of the hairs of the Patagonian ground-sloth and of the living South American edentates forms the subject of an essay by Dr. W. G. Ridewood, which appears in the May issue of the *Quarterly Journal of Microscopical Science*. The most generally interesting of the author's observations are those relating to the hairs of the two living types of sloth, and the structure which permits of the growth of an alga in each. In the three-toed sloth the hair is invested with a thick extra-cortical layer. "The layer has a tendency to crack in a transverse direction, and in the cracks there come to lodge unicellular algae, to which Kühn has given the name *Pleurococcus bradyi*. The moisture of the climate in which *Bradypus* lives enables the alga to live and propagate in this curious position, and the sloth acquires a general green tint which must render it very difficult to distinguish as it hangs among the green foliage." In the two-toed sloth, on the other hand, the bulk of the hair is composed of cortex which is longitudinally fluted or grooved, the grooves being filled with strands of extra-cortex in which flourishes an alga (*Pleurococcus choleopi*) distinct from the one infesting the hairs of the three-toed species. Of quite a different type are the hairs of the ground-sloth, which are smooth and solid, Dr. Ridewood rejecting the idea of Dr. Lönnberg that they were originally coated with a cortex that has now perished. An important biological contribution to the same journal is the life-history of a North American bivalve mollusc, *Nucula delphinodonta*, by Prof. G. A. Drew, of the University of Maine.

UNDER the title of "Zoological Gleanings from the Royal Indian Marine Survey Ship *Investigator*," Major Alcock has collected together the biological observations made by the different medical officers who have served on board during his own connection with the vessel. These observations, the author tells us, are buried in reports that are not readily accessible, or scattered through papers on systematic zoology where they may easily be overlooked. The observations are arranged under eight headings, namely, commensalism; sexual characters, pairing and viviparity; sounds made by marine animals; notes on stalk-eyed crustaceans; instances of protective and warning coloration; phosphorescence; peculiarities in food of marine animals; and notes on reptiles and fishes. The "gleanings" are really a mine of information to the naturalist, and the author has rendered a distinct service to his fellow-workers in producing them in their present form. Among notable instances of commensalism is the case of the hermit-crab protected by a bag of sea-anemones. Another instance has often been observed on the reefs of the Andamans, where a crab of the genus *Cryptodromia* is protected by a sponge, which is shaped like a cap and tightly fitted to the crustacean.

GEOLOGICAL students and others interested in the science of the earth will find many desirable works in a classified catalogue of books and pamphlets on geology just issued by Messrs. Wesley and Son. The catalogue contains no less than 225 titles of works in various departments of geological science, classified under 28 headings. It includes the geological library of the late Mr. G. H. Morton, of Liverpool. A glance through the catalogue will repay any geologist anxious to increase his library.

The cryptogams collected by Dr. F. Welwitsch in 1853-1861 are described by the botanists who have determined them in the new volume (vol. ii. part ii.) of the "Catalogue of Welwitsch's African Plants," published by the trustees of the British Museum. Though the plants were collected more than forty years ago, the collection is in some respects the most extensive and representative yet obtained from Africa. The species now described belong to the vascular cryptogams, mosses, hepatics, marine algæ, freshwater algæ, diatomaceæ, lichenes, fungi and mycetozoa.

A MEMORIAL of the late Dr. George Brown Goode, together with a selection of his papers on museums and on the history of science in America, has been published in the form of a volume by the Smithsonian Institution. Dr. Goode was held in the highest regard in all places where natural science is cultivated, and this account of his life and services will be cherished by everyone who is aware of the influence he exerted upon museum development. The addresses delivered at the memorial meeting held at the U.S. National Museum are printed, and also an appreciative notice of his life and services to science, by Prof. S. P. Langley. Eight papers are published in the volume, most of them dealing with museum administration and the pursuit of natural knowledge in America. There is much of interest in these papers concerning the growth of scientific institutions in the United States, and united they form an appropriate memorial of an accomplished man.

AN interesting synthesis of some aromatic aldioximes by means of fulminating silver is described by Messrs. R. Scholl and E. Bertsch in the current number of the *Berichte*. If a polyhydroxylic derivative of benzene is dissolved in ether, some fulminating silver suspended in the solution, and hydrochloric acid led slowly into the well-cooled solution, the silver fulminate disappears and the hydrochloride of the new aldoxime crystallises out. The method has been successfully applied to resorcinol, orcinol, pyrogallol and phloroglucinol.

THE same number of the *Berichte* contains an account by C. Harries of the preparation and properties of the dialdehyde of succinic acid. The aldoxime of this aldehyde can be prepared by the method of Ciamician and Dennstedt from pyrrol and hydroxylamine, and this, suspended in water and treated with nitrous acid, gives an aqueous solution of the new dialdehyde from which the pure substance can be isolated with some difficulty by fractional distillation. Succinic aldehyde is the first member of the aliphatic dialdehydes to be isolated in a pure monomolecular form, and is of interest as being the starting-point for the preparation of the three heterocyclic rings, furane, thiophene and pyrrol. The ready convertibility of this aldehyde into derivatives of these three rings is shown experimentally in the present note.

THE additions to the Zoological Society's Gardens during the past week include a Rhesus Monkey (*Macacus rhesus*) from India, presented by Mr. W. B. Bingham; an Otter (*Lutra vulgaris*, ♂), British, presented by Mr. W. Radcliffe Saunders; twelve Black Vultures (*Cathartes atratus*) from America, presented by Dr. E. A. Goeldi; two Cambayan Turtle Doves (*Turtur cambayensis*), a White-collared Ouzel (*Merula albicincta*), a Large Andaman Parrakeet (*Palaeornis magnirostris*), a Tickell's Flower-pecker (*Dicaeum erythrorhynchus*), a Cinnamon Tree Sparrow (*Passer cinnamomeus*), a Rufous-breasted Accentor (*Tharrhaleus strophotus*), a Black-throated Accentor (*Tharrhaleus atrigularis*), an Eastern Meadow Bunting (*Emberiza stracheyi*), four White-capped Buntings (*Emberiza stewarti*), two Indian Button Quails (*Turnix tanki*) from British India, presented by Mr. E. W. Harper; a Northern Mocking-bird (*Mimus polyglottus*) from North America, presented by Mr. H. C. C. Gülich; an Antillean Boa (*Boa diviniolus*) from the West Indies, presented by Mr. D. F. Mackenzie; a Sykes's Monkey (*Cercoptes albigularis*) from East Africa, a Chacma Baboon (*Cynocephalus porcarus*) from South Africa, a Smooth-headed Capuchin (*Cebus monachus*) from South-east Brazil, two Wanderoo Monkeys (*Macacus silenus*, ♂ & ♀), a Banded Parrakeet (*Palaeornis fasciata*), a Ring-necked Parrakeet (*Palaeornis torquata*), two — Snakes (*Cerberus rhynchops*), thirteen — Fish (*Saccobranchius fossilis*) from India, a Golden-naped Amazon (*Chrysotis auripalliata*) from Central America, a Lead-

beater's Cockatoo (*Cacatua leadbeateri*) from Australia, a Shining Parrakeet (*Pyrrhulopsis splendens*) from the Fiji Islands, a Blue-winged Green Bulbul (*Chloropsis hardwicki*) from British India, two Japanese Terrapins (*Clemmys japonica*) from Japan, a Blue Lizard (*Gerrhonotus caeruleus*) from Western North America, deposited; two Chinchillas (*Chinchilla lanigera*) from Chili, purchased; a Llama (*Lama peruana*), a Hybrid Lemur (between *Lemur xanthomystax* and *L. brunneus*), born in the Gardens.

OUR ASTRONOMICAL COLUMN.

OBSERVATIONS OF NOVA PERSEI.—In the *Mem. de la Soc. degli Spett. Ital.* (vol. xxx. pp. 77-90), Prof. A. Ricco describes the observations of the brightness and spectrum of Nova Persei, made at the Catania observatory. The various magnitudes given are similar to those already published by other observers, the light curve showing distinct oscillations from March 8.

The spectra were observed with the Merz refractor of 0.33 metre aperture and McClean star spectroscope, and photographs obtained with the photographic equatorial and Vogel spectrograph, the spectra being about 43 millimetres long, with exposures of one hour. The wave-lengths are given as follows:

3933 K	...	4179	...	4541	...	4923
3969 H	...	4235	...	4587	...	5019
4015	...	4310	...	4609	...	5168
4039	...	4341 Hγ	...	4636	...	5300
4071	...	4412	...	4681	...	5551
4102 Hδ	...	4493	...	4862 Hβ	...	5627

COMET 1901 a.—The comet is now getting so far away from the sun that it is in all probability beyond the reach of any but the largest instruments. The following ephemeris may be of service to those having sufficient optical power:—

Ephemeris for 12h. Berlin Mean Time.

1901.	R.A.	Decl.
	h. m. s.	
June 21	7 24 56	+ 10° 8' 3"
23	28 6	10 16'
25	31 9	10 23' 1"
27	34 7	10 29' 5"
29	7 37 0	+ 10 35' 2"

NEW VARIABLE STARS:—

74, 1901 (Persei). Herr P. Guthnick, of Bonn, finds that the star

$$\left. \begin{array}{l} \text{R.A.} = 3^{\text{h}} 27^{\text{m}} \\ \text{Decl.} = + 44^{\circ} 29' \end{array} \right\} (1900)$$

is variable to the extent of 0.6 magnitude. From the table of magnitudes given the period would appear to be about thirty days, but the gaps are too long for any accurate estimate. This star is the intensely orange-coloured χ Persei.

75, 1901 (Persei). Herr Fr. Deichmüller, of Bonn, finds variability in the star 36 Flamsteed, amounting to about 0.5 magnitude. The observations indicate a change from 4.92 to 5.65 magnitude twice a month. The variability of this star is confirmed by Herr Guthnick (*Astronomische Nachrichten*, Bd. 155, No. 3720).

FORMS OF IMAGES IN STELLAR PHOTOGRAPHY.—In the *Annals of Harvard College Observatory* (vol. xli. No. vi. pp. 153-187), Mr. E. S. King, the observer in charge of the photographic department at that institution, describes the various disturbing causes which affect the forms of star images obtained by photographic methods with different systems of following. The chief of these are irregularities of the driving clock, differential refraction, and flexure. To correct these errors two methods of guiding have been employed, the plate being moved by suitable adjusting screws, either with the telescope or independently of it, the latter method being preferred, as it permits, not only corrections in two coordinates perpendicular to each other, but also a rotary movement for the elimination of flexure and differential refraction.

The investigations described have been in hand since 1896, when they were undertaken in consequence of difficulties occurring in the observation of the Algol variable W Delphini